



RBR/PD/NoC/LS14r/1983-85  
North Carolina. Legislative  
Research Commission.  
Reports.

DATE	ISSUED TO

RBR/PD/NoC/LS14r/1983-85  
North Carolina. Legislative  
Research Commission.  
Reports.

NOT TO BE REMOVED  
FROM

UNC LAW SCHOOL  
LIBRARY





NORTH CAROLINA GENERAL ASSEMBLY

REPORT OF THE LEGISLATIVE COMMISSION  
TO STUDY THE WATER POLLUTION PROBLEMS  
AND WATER RESOURCES NEEDS OF THE CHOWAN  
RIVER BASIN AND THE ALBEMARLE SOUND BASIN

SUBMITTED TO THE MEMBERS OF THE 1983 GENERAL ASSEMBLY

December 9, 1982





NORTH CAROLINA GENERAL ASSEMBLY

STATE LEGISLATIVE BUILDING

RALEIGH 27611

December 8, 1982

The Honorable James C. Green  
Lieutenant Governor and President of  
the N. C. Senate  
N. C. General Assembly  
Legislative Office Building  
Raleigh, North Carolina 27611

The Honorable Liston B. Ramsey  
Speaker of the N. C. House of Representatives  
N. C. General Assembly  
Legislative Building  
Raleigh, North Carolina 27611

Gentlemen:

The 1981 General Assembly enacted House Bill 747 (Chapter 1090 of the 1981 Session Laws) that created a "Legislative Commission to Study the Water Pollution Problems and Water Resources Needs of the Chowan River Basin and the Albemarle Sound Basin". To fulfill its legislative charge the Study Commission met several times during 1981-82 and 1982-83 in Raleigh and communities located in the Chowan/Albemarle Sound Basin area. The Department of Natural Resources and Community Development, the Agricultural Task Force, the N. C. Department of Agriculture, researchers at N. C. State University, and others worked very closely with the Study Commission and are to be commended.

As directed in section 2 of House Bill 1090, the Study Commission submits the attached report to the members of the 1983 General Assembly and recommends that the Department of Natural Resources and Community Development






December 8, 1982  
Page 2

continue its efforts to improve the water quality  
condition of the Chowan River and Albemarle Sound area.

Respectfully submitted,

  
Senator Melvin R. Daniels, Jr.  
Co-Chairman

  
Representative John B. Gillam, III  
Co-Chairman

cc: Members of the 1983  
General Assembly



## Table of Contents

I. Introduction .....	1
II. Responsibilities of the Study Commission .....	1
III. Responsibilities of the Department of Natural Resources and Community Development .....	1, 2
IV. Brief History of Algal Blooms in the Chowan/ Albemarle Basin .....	2, 3, 4
V. Participants .....	4
VI. Problem Statement .....	5
VII. Recommendations and Resource Needs of the Depart- ment of Natural Resources and Community Development .....	5, 6
VIII. Nutrient Reduction Estimates for Agriculture .....	6, 7
IX. Study Commission Findings .....	7
X. Study Commission Recommendations .....	7, 8, 9
XI. Attachments .....	10



## Introduction

Chapter 1090 of the 1981 Session Laws authorized the creation of a Legislative Commission to Study the Water Pollution Problems and Water Resources needs of the Chowan River Basin and the Albemarle Sound Basin. The Lieutenant Governor, as President of the N. C. Senate, and the Speaker of the N. C. House of Representatives appointed Senator Melvin R. Daniels, Jr. and Representative John Gillam, III as Co-Chairmen of the Study Commission. The remaining six members of the Study Commission are:

### Lt. Governor Appointments

Senator J. J. Harrington  
Mr. Stanley Watson Hege  
Mr. H. W. Whitley

### Speaker Appointments

Representative Vernon James  
Mr. David T. Bateman  
Mr. Lennie Perry, II

Ms. Amy Brown, of Ahoskie with the approval of the chairmen, served in a voluntary capacity.

## Responsibilities of the Study Commission

The Study Commission was charged to conduct an extensive study of water pollution problems and water resources needs in the Chowan River and Albemarle Sound Basins. The Study Commission was to report its findings to the 1983 General Assembly by January 1, 1983 and was authorized to include any proposed legislation, programs or interstate agreements necessary to effectuate the Commission's findings. The report was to, also, include an evaluation of the Chowan River restoration efforts undertaken by the Department of Natural Resources and Community Development.

An appropriation of \$100,000 was also included in Chapter 1090 of the 1981 Session Laws, \$5,000 to the General Assembly for the operating expenses of the Chowan-Albemarle Legislative Study Commission, and \$95,000 to the Department of Natural Resources and Community Development.

## Responsibilities of the Department of Natural Resources and Community Development

With the appropriation of \$95,000, the Department of Natural Resources and Community Development was responsible



for conducting the Chowan River restoration efforts and initiating studies which could lead to an Albemarle Basin restoration project. In addition, the Department during 1981-83 was to:

- (a) develop a plan for an Albemarle Sound restoration project;
- (b) submit annual reports to the Governor and the General Assembly as needed;
- (c) conduct a program of investigations which would lead to recommendations for appropriate restoration strategies;
- (d) implement the restoration strategies through appropriate State and federal laws;
- (e) develop the appropriate financial, technical and institutional cooperation with local governments and Virginia;
- (f) develop an index or indicator for the success of the restoration efforts and report on it periodically;
- (g) operate a local office in the Albemarle Sound area to respond to citizen inquiries;
- (h) supplement state funds with the local and federal funds that can be made available to assist in the project;
- (i) assign a full-time project manager to the activities described in this act.

Brief history  
of algal blooms in  
the Chowan/Albemarle Basin

Several times in the past decade, the Chowan River has experienced nuisance algal blooms which, according to evidence presented, are symptomatic of advanced eutrophication and clear evidence that excessive concentrations of nutrients are present in the river. Heavy growths of algae were noted in 1970, bloom conditions developed in the summers of 1972, 73, 74, 76, 77, 1978, 1980 and are likely to recur in future years. Heavy local protests, major complaints, and media attention focused on the loss in recreational value and the impact upon the commercial and sport-fishing industry.





Earlier studies of the Chowan River appeared to produce inconclusive results and had tremendous difficulty in identifying a direct cause/effect relationship between different nutrient contributors to the Chowan and the growth of algae or algal blooms of the Chowan River. In fact, while swimming and boating activities have been mentioned, and while red sore disease, a bacterial infection of fish, has been linked to deteriorating water quality, no direct cause/effect relationship had been made between water quality conditions in the Chowan/Albemarle Basin and declining fish catches prior to the undertaking of the 1981-83 studies by the Department of Natural Resources and Community Development.

In 1979, the State of North Carolina expanded its efforts to restore the water quality conditions of the Chowan River. A General Fund appropriation in 1979-80 and 1980-81 of \$100,000 was made to the Department of Natural Resources and Community Development to support 3 staff scientists and an office to be established in Edenton.

In 1979, under the direction of Governor Hunt and the Secretary of the Department of Natural Resources and Community Development, the Department of Natural Resources and Community Development released a report titled the "Chowan River Restoration Project (CHORE), A Plan of Action to Restore the quality of the Chowan River water to Acceptable Levels". This plan of action was to be a combined, cooperative commitment on the part of the states of North Carolina and Virginia to develop a long term water quality management plan for the Chowan River Basin. Virginia's then Governor Dalton and Secretary of Commerce and Resources, Maurice B. Rowe, assured this State of their cooperation. (A copy of the "CHORE" report is included as attachment A).

The Environmental Management Commission in the Department of Natural Resources and Community Development, continued its efforts to regulate nutrient inputs to the Chowan River by classifying the river as nutrient sensitive, thereby prohibiting an increase of nutrients in waters so classified. Other tributaries of the Albemarle Sound are beginning to display water quality problems and signs of nutrient enrichment. As noted in the report of the Department of Natural Resources and Community Development to the Chowan/ Albemarle Legislative Study Commission, large algal populations have been noted in Albemarle Sound tributaries, such as Alligator River and Scuppernong River, several areas are closed to shellfishing, several areas witnessed an outbreak of red sore disease, and the commercial fish catch in the Albemarle Sound has declined in recent years.

In response to the many issues and difficulties involved in improving the water quality conditions of the Chowan River and arresting the decline of water quality conditions in other Albemarle Sound tributaries, the 1981



General Assembly enacted House Bill 747 (Chapter 1090 of the 1981 Session Laws) (attachment B) which authorized the creation of the aforementioned Chowan/Albemarle Legislative Study Commission. The Study Commission worked very closely with staff of the Division of Environmental Management in development of the Chowan/Albemarle 5-year Action Plan.

#### Participants

The enactment of House Bill 747 can be attributed to the strong interests and concerns of local officials, residents, industry, legislators representing the Chowan River and Albemarle Sound areas, and other members of the General Assembly deeply concerned about proliferating water quality problems throughout the State of North Carolina. Consequently, the staff of the Division of Environmental Management in the Department of Natural Resources and Community Development provided technical staff assistance to the Study Commission.

The Agricultural Task Force was called upon to provide input to the Division of Environmental Management in the development of the Chowan/Albemarle 5-year Action Plan. In addition, the Agricultural Task Force presented its findings and recommendations, as they relate to the agricultural community, to the Study Commission in Edenton, North Carolina on November 9, 1982. The Agricultural Task Force consisted of representatives from:

- (a) the Agricultural Extension service and Agriculture Research Service of North Carolina State University;
- (b) the North Carolina Department of Agriculture;
- (c) the United States Department of Agriculture's Soil Conservation Service and Agriculture Stabilization and Conservation Service;
- (d) the North Carolina Farm Bureau Federation; and
- (e) The North Carolina State Grange.

The Division of Environmental Management was represented in a non-voting capacity and the Division of Forest Resources in a liaison capacity. The Division of Soil and Water Conservation provided staff to and coordinated the efforts of the Agricultural Task Force in its efforts to develop an agricultural plan for reducing nonpoint source pollution to the Chowan River, Albemarle Sound and its tributaries.



### Problem Statement

The Study Commission's major task was to recommend ways to "clean up" the Chowan River, Albemarle Sound and its tributaries, to reduce the level of pollution from all sources, and regain the pleasant water quality conditions that exist in other water bodies of the State. The Study Commission's task was a very complicated one since there are many contributors to the pollution problems of the Chowan, and jurisdictional problems are evident between the State of Virginia and North Carolina.

The Chowan/Albemarle 5-year Action Plan (attachment C), for example, points out that concurrent reductions of nitrogen and phosphorus are likely to produce the most dramatic effect on algal populations in the Chowan River, and that this is the only feasible nutrient control strategy which would improve the eutrophication problems in the Chowan/Albemarle Basin. Consequently, a basin-wide management program involving North Carolina and Virginia is recommended. Jurisdictional problems with Virginia are evident when the issue of management planning and implementation is discussed. In addition, the agricultural community, a contributor of nutrients to the Chowan/Albemarle Basin, possesses unique difficulties in reducing the levels of nutrient input to the Basin.

### Recommendations and resource needs of the Department of Natural Resources and Community Development

The Study Commission was also charged to evaluate the Chowan River restoration efforts of the Department of Natural Resources and Community Development. The following recommendations are contained in the Chowan/Albemarle 5-year Action Plan of the Division of Environmental Management:

- (1) A 30-40% combined reduction in total phosphorus inputs and 15-25% reduction in total nitrogen inputs to the Chowan River;
- (2) Continuation and expansion of point source controls for nitrogen and phosphorus in the North Carolina portion of the Basin;
- (3) Continuation and expansion of land application systems for the treatment of major municipal discharges;
- (4) By September 1983, Virginia will develop a final management strategy to reduce their inputs to the Chowan River;



- (5) The adoption of a phosphate detergent ban in the Chowan/Albemarle Basin;
- (6) The implementation of agricultural best management practices through a strong educational program;
- (7) The combined monitoring and permitting of point source wastewater discharges;

#### Resource needs:

- (1) Continued funding for three scientists assigned to the Chowan River restoration effort.
- (2) A research study funded by the N. C. Division of Marine Fisheries, the Water Resources Research Institute, and/or the North Carolina Sea Grant Program should be undertaken to confirm the link between eutrophication and declining seafood catches.

#### Nutrient reduction estimates for Agriculture:

Specific estimates of reductions for agricultural nutrients and methods of achieving these reductions as suggested by the Agricultural Task Force on November 9, 1982 are:

#### Estimates:

- (1) Reduce fertilizer nitrogen loss by 20%.
- (2) Reduce fertilizer phosphorus loss by 30%;
- (3) Reduce animal waste nitrogen and phosphorus losses;

Specific methods by which reductions are to be achieved include:

- (1) Fertilizer management:
  - (a) soil tests;
  - (b) proper amounts and application techniques;
- (2) Soil and water conservation techniques:
  - (a) conservation tillage;
  - (b) field borders;
  - (c) grassed waterways;





(3) Animal Waste Management:

- (a) storage-land application systems;
- (b) waste testing;
- (c) proper application techniques and amounts;

Phosphorus and nitrogen nutrient reduction goals for other point source contributors as stated in the Chowan River Water Quality Management Plan (attachment D) are:

- (1) industrial point sources 92%;
- (2) municipal and other domestic point sources 95%.

#### Study Commission Findings

The Study Commission's findings are:

- (1) There are many contributors of pollutants to the Chowan River.
- (2) Some nutrient contributors such as agriculture experience unique and hard to manage difficulties in reducing their levels of nutrient inputs to the Chowan River.
- (3) Economic costs associated with implementation of best management practices for agriculture and the difficulty of mandating the implementation of such practices for all farmers are but two of the unique problems associated with reducing the levels of nutrient inputs from the agricultural community.
- (4) Other major contributors, such as municipalities and some industries, are apt to apply more cost effective state-of-the-art technology to reduce their levels of nutrient inputs to the Chowan River.

#### Study Commission Recommendations

In fulfilling its responsibility to include an evaluation of the Chowan River restoration efforts, the Study Com-



mission endorses the findings and recommendations of the Department of Natural Resources and Community Development contained in the Chowan/Albemarle 5-year Action Plan. In addition, the findings and recommendations of the Agricultural Task Force are also endorsed.

More specific recommendations of the Study Commission are:

- (1) The Study Commission encourages the Division of Environmental Management, the Division of Soil and Water Conservation, and the Agricultural Task Force to continue their efforts at reducing the level of nutrient inputs to the Chowan River from all sources.
- (2) The Study Commission encourages the voluntary efforts of the agricultural community to continue and expand the use of best management practices among farmers. While placing a time frame on full implementation of best management practices is not feasible at this time, the Study Commission strongly encourages widespread use of BMPs as a method of reducing agricultures' contribution of nutrients to the Chowan River.
- (3) Evidence presented in the Chowan/Albemarle Action Plan supports the contention that a phosphate detergent ban adopted for all counties in the North Carolina part of the Chowan/Albemarle Basin could reduce phosphorus inputs from municipal treatment plants by as much as 50%. Consequently, the Study Commission recommends that the Department of Natural Resources and Community Development continue their study of such a ban and determine the effects on the consumer, the industry, cost of using alternative detergents, and the need for additional legislation to impose a phosphate detergent ban.

However, the Study Commission recommends statewide application if such a ban is legislatively enacted or administratively adopted.

- (4) The Study Commission recommends that the Secretary of the Department of Natural Resources and Community Development and the Governor continue their efforts in seeking the cooperation and involvement of the State of Virginia in "cleaning up" the Chowan/Albemarle Basin.



- (5) The State of Virginia has recently made overtures concerning the withdrawal of water from the Chowan River Basin. But due to the delicate nature of the Chowan and its tributaries, the Study Commission recommends:
- (a) that careful consideration be given to any proposal for interstate water withdrawals from the Chowan River Basin at any time;
  - (b) that any proposal for interstate water withdrawal from the Chowan River Basin be accompanied by a feasibility study that determines the full impact of water withdrawals on water quality conditions, aquatic life, and recreation in the Chowan River Basin; and
  - (c) that should such a proposal from the State of Virginia be made, the Governor and the Secretary of the Department of Natural Resources and Community Development are encouraged to negotiate with Virginia officials on increasing their efforts to "clean up" the Chowan River.
- (6) The Study Commission is cognizant of the resource needs of the Division of Environmental Management and the Division of Soil and Water Conservation in their ongoing efforts to concentrate on "cleaning up" the Chowan/Albemarle Basin. Therefore, it recommends that the Department of Natural Resources and Community Development seek appropriate funding for these staffs to continue their efforts.
- (7) The Study Commission firmly believes that the groundwork for addressing the water pollution problems and water resource needs of the Chowan River and Albemarle Sound Basin has been established, and is encouraged by the ongoing efforts of the Department of Natural Resources and Community Development, and others, to "clean up" the Chowan River and Albemarle Sound Basin. While much progress has been made, there still remains much to be accomplished in solving the long range water pollution problems and water resource needs of the Chowan/Albemarle Basin. Consequently, the Study Commission strongly believes that legislative involvement should continue in consonance with the "5 Year Action Plan" that governs the "clean up" of the Chowan/Albemarle Basin and recommends the continuation of this Study Commission for the 5-year period, 1983-84 through 1988-89.



Attachments (Attachments A, C, D, E, and F will be located in the Legislative Library for examination)

- A. Chowan River Restoration Project (CHORE), a Plan of Action to Restore the quality of the Chowan River water to acceptable levels (N. C. Department of Natural Resources and Community Development).
- B. House Bill 747 (Chapter 1090 of the 1981 Session Laws) (N. C. General Assembly).
- C. Chowan/Albemarle 5-Year Action Plan (Division of Environmental Management-Water Quality Section - Planning Branch - N. C. Department of Natural Resources and Community Development).
- D. Chowan River Water Quality Management Plan, N. C. Department of Natural Resources and Community Development.
- E. Agriculture and Water Quality, An Implementation Program (N. C. Soil and Water Conservation Commission and the N. C. Agricultural Task Force).
- F. Summary and Recommendations - UNC WRRI Researchers The Chowan River-Albemarle Sound System: Research Findings and Recommendations for its Management.





GENERAL ASSEMBLY OF NORTH CAROLINA  
SESSION 1981  
RATIFIED BILL

CHAPTER 1090

HOUSE BILL 747

AN ACT TO CREATE A LEGISLATIVE COMMISSION TO STUDY THE WATER POLLUTION PROBLEMS AND WATER RESOURCES NEEDS OF THE CHOWAN RIVER BASIN AND THE ALBEMARLE SOUND BASIN.

The General Assembly of North Carolina enacts:

Section 1. Creation of Commission; Membership; Chairmen. There is created the Legislative Commission to study the water pollution problems and water resources needs of the Chowan River Basin and Albemarle Sound Basin. The commission shall consist of eight members appointed as follows:

(1) two members of the Senate appointed by the Lieutenant Governor, one of whom shall be designated a cochairman of the commission;

(2) two nonlegislative members appointed by the Lieutenant Governor, both of whom shall be residents of the Chowan River or Albemarle Sound Basin areas;

(3) two members of the House of Representatives appointed by the Speaker of the House of Representatives, one of whom shall be designated a cochairman of the commission;

(4) two nonlegislative members appointed by the Speaker of the House of Representatives, both of whom shall be residents of the Chowan River or Albemarle Sound Basin areas.

Sec. 2. Duties of the Commission. The commission shall conduct an extensive study of water pollution problems and water

resources needs in the Chowan River and Albemarle Sound Basins. The commission shall report its findings to the 1983 General Assembly by January 1, 1983. The report may include any proposed legislation, programs or interstate agreements necessary to effectuate the findings of the commission. The report shall include an evaluation of the Chowan River restoration efforts undertaken by the Department of Natural Resources and Community Development.

Sec. 3. Staff. The Legislative Services Officer shall provide professional assistance and secretarial support to the commission.

Sec. 4. Duties of the Department. The Department of Natural Resources and Community Development shall be responsible for conducting the Chowan River Restoration efforts and initiating studies which could lead to an Albemarle Basin Restoration Project. During fiscal years 1981-82 and 1982-83 the Department shall: develop a plan for an Albemarle Sound Restoration Project; submit annual reports to the Governor and the General Assembly; conduct a program of investigations which shall lead to recommendations for appropriate restoration strategies; implement the restoration strategies through appropriate State and federal laws; develop the appropriate financial, technical and institutional cooperation with local governments and Virginia; develop an index or indicator for the success of the restoration efforts and report on it periodically; operate a local office in the Albemarle Sound area to respond to citizen inquiries; augment State funds with the local and federal

funds that can be made available to assist in the project; and assign a full-time project manager to the activities described in this act.

Sec. 5. Travel and Subsistence Allowances. Members of the commission who are members of the General Assembly shall receive subsistence and travel allowances at the rate set forth in G.S. 120-3.1. Members of the commission who are not officials or employees of the State of North Carolina and who are not members of the General Assembly shall receive per diem compensation and travel expenses at the rate set forth in G.S. 138-5. Any members of the commission who are officials or employees of the State of North Carolina shall receive travel allowances at the rate set forth in G.S. 138-6.

Sec. 6. Appropriations to the Commission. There is appropriated to the General Assembly from the General Fund the sum of five thousand dollars (\$5,000) for the 1981-82 fiscal year for the operation of the Legislative Commission to study the water pollution problems and water resources needs of the Chowan River and Albemarle Sound Basins and to evaluate the Chowan River Restoration efforts of the Department of Natural Resources and Community Development.

Sec. 7. Appropriations to the Department of Natural Resources and Community Development. For the purposes of this act, there is appropriated from the General Fund to the Department of Natural Resources and Community Development the sum of ninety-five thousand dollars (\$95,000) for the 1981-82 fiscal year.

Sec. 8. This act is effective upon ratification.

In the General Assembly read three times and ratified,  
this the 10<sup>th</sup> day of October, 1981.

JAMES C. GREEN

James C. Green

President of the Senate

LISTON B. RAMSEY

Liston B. Ramsey

Speaker of the House of Representatives







